

DIVISION OF ENVIRONMENT  
QUALITY MANAGEMENT PLAN

PART III:  
  
LANDFILL PROGRAM  
POLICIES AND PROCEDURES

Revision 1  
January 3, 2002

Kansas Department of Health and Environment  
Division of Environment  
Bureau of Environmental Remediation  
Curtis State Office Building  
1000 SW Jackson, Suite 410  
Topeka, Kansas 66612-1367

## Concurrences and Approvals

### Concurrences, KDHE Division of Environment, Bureau of Environmental Remediation

Name: Bob Jurgens

Title: Landfill / Drycleaning Unit Leader, Landfill Remediation Program

Signature\_\_\_\_\_ Date\_\_\_\_\_

Name: Leo Henning

Title: Section Chief, Assessment and Restoration

Signature\_\_\_\_\_ Date\_\_\_\_\_

Name: Bill Morris

Title: QA Representative, Bureau of Environmental Remediation

Signature\_\_\_\_\_ Date\_\_\_\_\_

Name: Gary Blackburn

Title: Director, Bureau of Environmental Remediation

Signature\_\_\_\_\_ Date\_\_\_\_\_

## TABLE OF CONTENTS

<u>Section</u>	<u>Revision No.</u>	<u>Date</u>
1 INTRODUCTION		
1.1 Purpose of Plan .....	0	04/01/01
1.2 Plan Revisions .....	1	01/03/02
2 DESCRIPTION OF PROGRAM		
2.1 Historical Overview .....	0	04/01/01
2.2 Mission and Goals .....	0	04/01/01
2.3 Organization and Responsibilities .....	1	01/03/02
3 QUALITY ASSURANCE POLICY STATEMENT		
4 QUALITY ASSURANCE CRITERIA AND PROCEDURES		
4.1 Field Station Site Selection .....	0	04/01/01
4.2 Field Equipment Installation .....	0	04/01/01
4.3 Sampling Types .....	1	01/03/02
4.4 Safety Considerations .....	1	01/03/02
4.5 Requesting Analytical Services .....	0	04/01/01
4.6 Procedures for Assessing Data Precision, Accuracy, Representativeness and Comparability .....	1	01/03/02
4.6.1 Ongoing Quality Assurance Review and Special Audits .....	1	01/03/02
4.6.2 Instrument Calibration and Maintenance ..	1	01/03/02
4.6.3 Quality Control Blanks and Spikes .....	1	01/03/02
4.7 Corrective Action Procedures .....	0	04/01/01
4.8 Data Management .....	0	04/01/01
4.9 Quality Assurance / Control Reporting Procedures	0	04/01/01
APPENDICES .....	1	01/03/02

\* Refer to State Cooperative and State Deferral Programs for the Bureau's Standard Operating Procedures (SOP's) used in this Program Plan.

## **Section 1**

### **INTRODUCTION**

#### **1.1     Purpose of Plan**

This document presents the quality assurance management plan for the Bureau of Environmental Remediation (BER) Landfill Program. The plan describes the mission, developmental history, organizational structure, environmental monitoring protocols, data handling procedures, and quality assurance (QA) and quality control (QC) requirements of these programs. Standard operating procedures (SOPs) and equipment used in the programs are presented in the Appendix A of the plan.

#### **1.2     Plan Revisions**

To be effective and useable, this document must be maintained in an up-to-date condition. As required by the Division of Environment Quality Management Plan (Part I, section 7), the contents of the plan are reviewed on at least an annual basis. Minor changes in the report's organizational structure or terminology may be approved by the Section Chief. However, major revisions which substantially change the contents of the document, especially in terms of QA policies or procedures, require the added approval of the Bureau QA Representative, Bureau Director and Division Director.

## **Section 2**

### **DESCRIPTION OF PLAN**

#### **2.1 Historical Overview**

The Landfill Remediation Section began operating early in 1993 as a direct result of the amendment of 40 CFR, Part 257 and adoption of 40 CFR, Part 258, dated August 1991, which amended Subtitle D of the Resource Conservation and Recovery Act (RCRA); these changes are typically referred to as Subtitle D. The law established new and more stringent requirements for the permitting and operation of Municipal Solid Waste Landfills (MSWLF). The law was adopted, by reference, as the New Kansas Landfill Program requirements by the 1993 Kansas Legislature. The new law superseded the Kansas Solid Waste Management Act of 1972, under which there were approximately 125 permitted MSWLFs in operation at the time of the effective date of Subtitle D.

The New Landfill Program was designed to separate the permitting and operation of the new Subtitle D Landfills from the old landfill program. The Subtitle D permitting and operation activities are under the sole jurisdiction of KDHE's Bureau of Waste Management (BWM). The corrective action activities and long-term monitoring of the Pre-Subtitle D Landfills and Post-Subtitle D Landfills are under the jurisdiction of the BER. The primary function of the program is the long-term monitoring, maintenance and corrective actions for permitted landfills in Kansas.

#### **2.2 Mission and Goals**

The initial mission of the Landfill Remediation Program is to close the last generation of landfills in such a way as to prevent environmental damage to the soils, waters and air of the state from the effects of 20 years of the burial of solid wastes. The primary goal of the Landfill Remediation Program is to monitor the landfills to insure that all contaminants present at closed sites are contained on and under the landfill sites and that off-site contamination will be appropriately remediated. The goal is to be accomplished by (1) on-site discussion of closure requirements by KDHE staff with site owners and their consultants, (2) approval of site closure plans by KDHE only after all conditions set by the agency are met, (3) KDHE approval of site monitoring plans, (4) Issuance of Consent Orders requiring 30-year site monitoring and maintenance by the site owners, and (5) Issuance of Consent or Administrative Orders by KDHE requiring off-site investigations and possible remedial activities where groundwater contamination is discovered at site boundaries.

## 2.3 Organization and Responsibilities

### ORGANIZATIONAL CHART

(See Exhibit 1 in BER QA Plan Part II)

The Bureau Director's responsibilities are defined in the BER QA management plan presented in Part II of the QMP.

The Section Chief is responsible for supervising the Unit Leader of the Landfill / Drycleaning Unit. The operations and implementation of uniform policies and procedures for the Landfill Remediation Program is the responsibility of the Section Chief. Additionally, the Section Chief is responsible for planning, organizing, supervising and directing the statewide activities of the Landfill Remediation Program.

The Unit Leader is the Landfill Remediation Program Manager and is responsible to ensure the requirements of the program-level QA management plans and SOPs are implemented in a consistent, timely and reliable manner. Working with the Section Chief, the Unit Leader strives to improve the precision, accuracy and reliability of all environmental data collected and products (reports) generated as part of Landfill Remediation Program activities through the effective allocation of staff and resources.

The Environmental Geologists and Environmental Scientist are responsible for post-closure inspections, groundwater investigations, and remediation of closed landfills. The Environmental Geologists also conduct file searches and site investigations of old city dumps and establish contract with city officials to repair old city dump sites. To accomplish these tasks, the geologists work with the responsible party(s), environmental consultants and the general public.

### **Section 3**

## **QUALITY ASSURANCE / CONTROL POLICY STATEMENT**

Project Managers do not possess a distinct set of Standard Operating Procedures for administration of Quality Assurance/Quality Control for the Landfill Remediation Program. The Unit's role within the program is limited to reviewing and approving work plans and reports for investigative and remedial activities conducted by Potentially Responsible Parties (PRPs) and their contractors. As an element of the review process, the Unit requests that the PRP, or PRP's contractor, provide a well-defined Quality Assurance Project Plan, with respect to certain Standard Operating Procedures included in Appendix A. Project Managers review each of these site specific Quality Assurance Project Plans to determine compliance with KDHE's SOPs and numerous federal regulatory guidance documents for QA/QC.

Project managers are responsible for the collection of split, or duplicate environmental samples to ensure the representativeness and general quality of the various samples collected at a site throughout the investigation. All sampling activities conducted by the Landfill Remediation Program project managers or designated technicians comply with the following program policies:

- (1) The objectives of any environmental monitoring project shall be determined prior to implementation of data collection activities. This determination shall be accomplished during the planning stage of the project so that appropriate procedures will be incorporated into the design of the project and the resulting data will have a reasonable probability of meeting the stated objectives.
- (2) Sample collection and analysis activities and data management activities shall be subjected to periodic evaluation by supervisory personnel to identify and correct deficiencies and enhance the overall credibility of the environmental monitoring programs.
- (3) All data collection activities will be accomplished and documented in accordance with a Divisional QA Plan and applicable SOPs.

## Section 4

### QUALITY ASSURANCE/CONTROL CRITERIA AND PROCEDURES

#### 4.1 Field Station Site Selection

The selection of sampling locations is based on several factors including type and purpose of the sample, representativeness, accessibility (permission to sample), location of existing wells, location of potential source areas of contamination and location of potential target areas. Selection criteria vary depending upon the type of medium being sampled and the purpose of the sampling which are described in site-specific Quality Assurance Project Plans (QAPP's).

#### 4.2 Field Equipment Installation

Generally field staff will use non-dedicated sampling equipment that is either disposable or reusable. Sampling equipment designated for reuse must be decontaminated as specified in SOP (BER-05). Some sites as designated by the project manager may have dedicated sampling equipment in place.

#### 4.3 Sampling Types

Program staff primarily provide Quality Assurance/Quality Control management services through the collection of split, duplicate, replicate, and/or collocated environmental samples concurrent with environmental sampling performed by the PRP or the PRP's environmental contractor. In addition, program staff may occasionally be required to collect independent environmental samples.

Ground water is the most frequent environmental media sampled, followed by surface and subsurface soils, surface water, sludge, sediment, and air. In addition, program staff may be required to collect special samples including influent and effluent water samples associated with ground water or surface water remedial systems, or remedial performance samples including potentially hazardous wastes or materials which have been stabilized to facilitate handling and transport or to reduce contaminant mobility.

Program staff collecting Quality Assurance/Quality Control environmental samples adhere to the sample collection procedures specified in the KDHE-approved site-specific sampling plan. KDHE's approval of the site-specific sampling plan is dependent upon the plan's compliance with field methods and sampling procedures provided in the KDHE SOP's (BER-01, BER-02, BER-03, BER-04, and BER-33). This document is a compilation of demonstrated field techniques that have been used during investigative and remedial activities at contaminated sites. The purpose of the plan is to ensure that sampling data collection activities will be comparable to and compatible with data previously collected.



#### 4.4 Safety Considerations

Field and laboratory staff that participate in environmental monitoring programs encounter potentially dangerous situations on a frequent basis. In addition to the routine possibility of automobile or equipment accidents, employees may encounter extremely slippery surfaces, toxic or hazardous substances, infectious microorganisms, fire or electrocution hazards, vicious dogs, belligerent persons, or other threatening situations. Injuries or illnesses resulting from such situations may lead to substantial human suffering and, from a QA/QC perspective, deprive programs of the services of a valuable employee for an extended period of time.

Although it is not possible to predict every conceivable risk that may arise during the course of work, supervisors must ensure that those risks faced by staff on a recurring basis are addressed in the SOPs and are discussed during employee training. Field and laboratory staff are expected to abide by the safety protocols contained within the QA management plans and SOPs and to integrate safety considerations into all aspects of their work. Field staff should follow SOPs BER-18, BER-20, BER-21 and BER-24. BER routinely budgets for ongoing safety training expenses and annual medical physicals for field staff associated with monitoring and/or field inspections of hazardous materials (refer to BER-17).

Project managers are expected to bring potentially unsafe practices or situations to the attention of their Unit Leader. In turn, the Unit Leader shall evaluate the practice or situation and either take the appropriate corrective action or, in complicated circumstances, seek the advice of the Section Chief or higher level supervisor. Major corrective actions warranting changes in a SOP shall be implemented by staff only upon approval of the Section Chief, Bureau QA Representative and Bureau Director.

#### 4.5 Requesting Analytical Services

Program staff can employ several approaches for the submission of environmental samples to a laboratory for analyses. Staff can submit environmental samples directly to the Kansas Health and Environmental Laboratory (KHEL) or contract the services of an outside laboratory.

The selected laboratory must have a specific Quality Assurance and Quality Control Plan approved by the Division Director prior to utilization by the Section. Generally, the KHEL will be used for the majority of the program's analytical service. However, the purpose of the contractual arrangements is to provide additional analytical capacity Quality Assurance and Quality Control (inter-laboratory duplicates) and to provide expanded analytical services.

#### 4.6 Procedures for Assessing Data Precision, Accuracy, Representativeness and Comparability

##### 4.6.1 Ongoing Quality Assurance Review and Special Audits

QA/QC aspects of the BER Landfill Program are subject to ongoing review by the Unit Leader. Staff are expected to cooperate fully with administrative requests for information on data precision /accuracy and overall QC performance. The Unit Leader is expected to track the QC performance of Project Managers, assist managers in identifying QC deficiencies within their assigned sites, and facilitate the initiation of necessary corrective actions. The Section Chief is expected to track the QC performance of the program, assist the Unit Leader and Project Managers in identifying QC deficiencies within their programs, and facilitate the initiation of necessary corrective actions. The results are reported to the Bureau QA Representative and Bureau Director.

##### 4.6.2 Equipment Calibration and Maintenance

All field equipment must be checked out by staff from the Bureau's Equipment and Supply Technicians. The individual users of field equipment are responsible for the maintenance (in accordance with manufacturer's procedural manuals and/or Standard Operating Procedures) of the equipment while being used in field operations. The user should ensure the equipment is checked for proper operation and is current with calibration requirements (if needed) prior to leaving for field. The user should record any malfunctions encountered while in the field in the logbook associated with the equipment. The user should make sure the malfunctions are communicated to the Unit Leader and the Bureau's Equipment and Supply Technicians upon return of the equipment to storage so that appropriate action can be initiated to repair the item of equipment, or initiate actions (e.g., prepare a Purchase Requests or Purchase Acquisitions) to have the equipment repaired upon return from the field.

##### 4.6.3 Quality Control Blanks and Spikes

Quality control procedures must be taken by field staff to ensure the integrity of the samples collected. Without checks on the sampling and analytical procedures, the potential exists for contradictory or incorrect results. Procedures describing quality control samples are defined in BER-12 or are included in specific SOPs.

#### 4.7 Corrective Action Procedures

In the context of Quality Assurance (QA), Landfill Remediation Program corrective actions are procedures that may be implemented on environmental samples that do not meet predetermined QA specifications. In general, the corrective action procedures program addresses the analysis of any cause precipitating a negative audit finding and identifies the appropriate corrective action(s) necessary to address it. Program staff, or the appropriate Quality Assurance/Quality Control program designee, are responsible for reviewing data validation reports, audit reports and nonconformance reports to identify significant or repetitious conditions adverse to quality, or deficiencies regarding the implementation or adherence to required Quality Assurance practices. In addition, the program

staff, or QA/QC designee, is required to investigate the source(s) of the problem and is responsible for defining and/or implementing the necessary actions to remedy the problem.

The quality characteristics of data generated by sampling, monitoring, or analyzing, is defined in the following terms:

Precision: A measure of mutual agreement among individual measurements of the same property, usually under prescribed similar conditions. Precision is best expressed in terms of the standard deviation. Various measures of precision exist depending on the prescribed similar conditions.

Completeness: A measure of the amount of valid data obtained from a measurement system, compared with the amount of data needed to obtain the project data quality objectives.

Representativeness: The degree to which data accurately and precisely represent a characteristic of the population, the parameter variations at a sampling point, a process condition, or an environmental condition. It also includes how well the sampling point represents the parameter variations that are under study.

Comparability: The confidence with which one data set can be compared with another; a qualitative characteristic that must be assured in terms of sampling, analysis, reporting, etc.

The exact values of the quality characteristics will vary depending upon the analytical processes and procedures employed. Site-specific work plans will detail the recommended field activities and analytical methodologies necessary to establish the appropriate data quality characteristics. Corrective actions may include re-sampling, re-analyzing samples, or auditing laboratory procedures.

#### 4.8 Data Management

All work plans submitted in association with the Landfill Remediation Program require a data management system. The system should include field logs, sample management and tracking procedures, and document control and inventory procedures for both laboratory data and field measurements. The system should ensure that the data collected during the investigation are of adequate quality and quantity to support the findings of the investigation, risk assessment (if performed), and corrective action research.

For each measurement, the data reduction scheme planned for collected data, including all equations used to calculate the concentration or value of the measured parameter, should be described. The principal criteria employed to validate the integrity of the data during collection and reporting should be referenced. All data collected should be validated by the appropriate level of laboratory quality control to ascertain whether it is appropriate for its intended use. All task management and quality controls implemented shall be documented within the appropriate report appendix.

#### 4.9 Quality Assurance/Control Reporting Procedures

All reports or deliverables submitted through the Landfill Remediation Program require a Quality Assurance / Quality Control status summary of the project and any conditions adverse to the quality. The report should contain an assessment of measurement data accuracy, precision and completeness, results of any performance audits, results of system audits, any reported nonconformance, and any Quality Assurance problems, together with recommended solutions or corrective actions.